IWG 4-1(Rev.1)
28 July 1998

IWG-4

DRAFT PRELIMINARY VIEWS FOR WRC-2000

ISSUE: Pursuant to the Resolutions identified in WRC-2000 Agenda Item 1.13, regulatory and technical provisions to enable sharing among non-GSO FSS, GSO FSS, GSO BSS, space sciences and terrestrial services.

WRC-2000 Agenda Item 1.13: *on the basis of results of the studies in accordance with Resolutions 130(WRC-97), 131(WRC-97), and 538(WRC-97):*

1.13.1: *to review and, if appropriate, revise the power limits appearing in Articles **S21** and **S22** in relation to the sharing conditions among non-GSO FSS, GSO FSS, GSO broadcasting-satellite service(BSS), space sciences and terrestrial services, to ensure the feasibility of these power limits and that these limits do not impose undue constraints on the development of these systems and services;*

1.13.2: *to consider the inclusion in other frequency bands of similar limits in Articles **S21** and **S22**, or other regulatory approaches to be applied in relation to sharing situations;*

BACKGROUND: WRC-97 adopted provisional power flux density limits in certain frequency bands which would apply to non-GSO FSS systems to protect GSO FSS networks and GSO BSS networks. Resolution 130 (WRC-97), *Use of Non-Geostationary Systems in the Fixed-Satellite Service in Certain Frequency Bands* and Article S22.2 of the Radio Regulations contain provisional limits corresponding to an interference level caused by one NGSO system in the frequency bands 10.7-12.75 GHz, 17.8-18.6 GHz, and 19.7-20.2 GHz. Resolution 538, *Use of the Frequency Bands Covered by Appendices 30 and 30A by Non-GSO Systems in the Fixed-Satellite Service*, and Article S22 contain provisional limits corresponding to permissible levels of interference level from a NGSO system into a GSO BSS network. These limits are provisional, subject to review by ITU-R and confirmation by WRC-2000. WRC-97 also addressed the subject of power flux density limits applicable to NGSO FSS systems for protection of terrestrial services in the bands 10.7-12.75 GHz and 17.7-19.3 GHz. Resolution 131 (WRC-97), *Power Flux-Density Limits Applicable to Non-GSO FSS Systems for Protection of Terrestrial Services in the Bands 10.7-12.75 GHz and 17.7-19.3 GHz*, and Article S21 contain limits, some of which are provisional as to certain NGSO FSS systems, to protect terrestrial service. Review of the provisional limits was requested in Resolution 131, and the resolution also calls for further study of the non-provisional pfd limits.

PRELIMINARY VIEWS:

The U.S. continues to review the power limits -- both the provisional limits adopted in Article S22 and also contained in WRC-97 Resolutions 130 and 538, and the limits in Article S21 and also contained in WRC-97 Resoultion 131 -- with the intent of protecting

the GSO FSS, GSO BSS, space sciences, and terrestrial services while allowing the introduction of NGSO FSS systems.

There will be a need for an alternative approach to facilitate sharing in some specific situations. For example, the provisional epfd limits and associated time allowances may not adequately protect existing GSO FSS networks with large earth station antennas (large earth station antennas will be defined as a result of technical work within the ITU-R). The U.S. favors coordination between NGSO FSS networks and these GSO FSS networks.

Sharing with satellite systems in quasi-geostationary satellite orbit needs to be considered within this agenda item.

The APFD definition in the Radio Regulations should be modified to take into account the normalized directivity of the GSO satellite antenna. (For ease of computation, the WRC-97 APFD definition did not take into account the GSO satellite antenna pattern.) The corresponding APFD limits would consist of several values that are associated with various GSO satellite reference antenna patterns. Due to the differing spacecraft design practices in Ku- and Ka-bands, the antenna directivity patterns may vary with frequency band.

GSO systems operating in slightly inclined orbits constitute an important subgroup of all operational satellites and need to be protected from NGSO interference.

Outside of bands where provisional power limits were adopted by WRC-97, no technical basis has been established for consideration by WRC-2000 of the power limits approach to sharing between and/or among NGSO FSS systems and GSO FSS, GSO BSS, space sciences, and/or terrestrial services systems.

The study of the provisional power flux-density limits by the ITU-R and the review of these limits by WRC-2000 must ensure protection of modifications to the BSS Plans, including currently pending modifications and future modifications to the Plans.
The majority of BSS systems that have been implemented, or will be implemented in the future, are modifications to the Plans. In addition, more than three years can lapse between the submission of Annex 2 information regarding proposed modifications to the Plans by an administration, and the actual publication of this information by the BR. This can result in substantial delays in completion of the modification process, even for modifications of existing frequency assignments. WRC-97 (in both Resolution 538 and Resolution 721, agenda item 1.13) clearly foresaw the need to protect future modifications to the Plans from NGSO FSS systems, and to ensure that these limits do not impose undue constraints on the development of these systems and services (as stated in agenda item 1.13).